

WHAT IS CLAIMED IS:

1. A semiconductor device comprising:

a semiconductor substrate of a first conductivity type;

5 a gate insulation film disposed on a surface of the semiconductor substrate;

a gate electrode disposed on the gate insulation film;

a source layer of a second conductivity type formed in the surface of the semiconductor substrate and adjacent one end of the gate electrode;

10 a high impurity drain layer of the second conductivity type formed in the surface of the semiconductor substrate and apart from another end of the gate electrode;

a low impurity drain layer of the second conductivity type formed in the surface of the semiconductor substrate, the low impurity drain layer being disposed at least between the high impurity drain layer and said another end of the gate electrode, and the low impurity drain layer having an impurity concentration lower than an impurity concentration of the high impurity drain layer; and

15 a buried layer of the first conductivity type formed in a region deeper than the high impurity drain layer and forming a PN junction with the high impurity drain layer.

2. The semiconductor device of claim 1, further comprising an insulation film

20 thicker than the gate insulation film and disposed on a surface of the low impurity drain layer so as to be adjacent the gate insulation film, wherein the gate electrode extends to cover a part of the thick insulation film.

3. The semiconductor of claim 1, wherein the buried layer is not in contact with the

25 low impurity drain layer.

4. A semiconductor device comprising:

a semiconductor substrate of a first conductivity type;

a gate insulation film disposed on a surface of the semiconductor substrate;

30 a gate electrode disposed on the gate insulation film;

a source layer of a second conductivity type formed in the surface of the semiconductor substrate and adjacent one end of the gate electrode;

5 a high impurity drain layer of the second conductivity type formed in the surface of the semiconductor substrate and apart from another end of the gate electrode, a depth of the high impurity drain layer being larger than a depth of the source layer; and

a low impurity drain layer of the second conductivity type formed in the surface of the semiconductor substrate, the low impurity drain layer being disposed at least between the high impurity drain layer and said another end of the gate electrode, and the low impurity drain layer having an impurity concentration lower than an impurity concentration of the
10 high impurity drain layer.

5. The semiconductor device of claim 4, further comprising a buried layer of the first conductivity type formed in a region deeper than the high impurity drain layer and forming a PN junction with the high impurity drain layer.
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6. The semiconductor of claim 4, wherein the depth of the high impurity drain layer is larger than a depth of the low impurity drain layer.

7. The semiconductor of claim 4, wherein the depth of the high impurity drain layer
20 is smaller than a depth of the low impurity drain layer.

8. The semiconductor device of claim 4, wherein the high impurity drain layer comprises a first drain layer deeper than the source layer and a second drain layer of a same depth as the source layer.
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9. The semiconductor device of claim 4, further comprising an insulation film thicker than the gate insulation film and disposed on a surface of the low impurity drain layer, wherein the gate electrode extends to cover a part of the thick insulation film.